SEQUENCE LISTING

<110> TAYLOR, Catherine, et al.

<120> Methods and Compositions for Modulating Senescense

<130> 10799/13

<140> Not Assigned
<141> 2001-07-23

<160> 21

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 1139
<212> DNA
<213> Rodent

<220>
<221> CDS
<222> (33)...(497)

<400> 1

```
caggtctaga gttggaatcg aagcctctta aa atg gca gat gat ttg gac ttc    53
                                     Met Ala Asp Asp Leu Asp Phe
                                      1               5

gag aca gga gat gca ggg gcc tca gcc acc ttc cca atg cag tgc tca   101
Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser
         10                  15                  20

gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag   149
Ala Leu Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys
     25                  30                  35

atc gtc gag atg tct act tcg aag act ggc aag cat ggc cat gcc aag   197
Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys
 40                  45                  50                  55

gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat   245
Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp
                 60                  65                  70

atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat   293
Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn
             75                  80                  85

gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag   341
Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln
         90                  95                  100

gac agt ggg gag gta cga gag gac ctt cgt ctg cct gag gga gac ctt   389
Asp Ser Gly Glu Val Arg Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu
    105                 110                 115

ggc aag gag att gag cag aag tat gac tgt gga gaa gag atc ctg atc   437
Gly Lys Glu Ile Glu Gln Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile
120                 125                 130                 135
```

```
aca gtg ctg tcc gcc atg aca gag gag gca gct gtt gca atc aag gcc   485
Thr Val Leu Ser Ala Met Thr Glu Glu Ala Ala Val Ala Ile Lys Ala
                140                 145                 150

atg gca aaa taa ctggcttcca gggtggcggt ggtggcagca gtgatccatg       537
Met Ala Lys  *
```

```
agcctacaga ggcccctccc ccagctctgg ctgggccctt ggctggactc ctatccaatt 597
tatttgacgt tttatttttgg ttttcctcac cccttcaaac tgtcggggag accctgccct 657
tcacctagct cccttggcca ggcatgaggg agccatggcc ttggtgaagc tacctgcctc 717
ttctctcgca gccctgatgg gggaaaggga gtgggtactg cctgtggttt aggttccccc 777
ctccctttt ctttttaatt caatttggaa tcagaaagct gtggattctg gcaaatggtc 837
ttgtgtcctt tatcccactc aaacccatct ggtcccctgt tctccatagt ccttcacccc 897
caagcaccac tgacagactg gggaccagcc cccttccctg cctgtgtctc ttcccaaacc 957
cctctatagg ggtgacaaga agaggagggg gggaggggac acgatccctc ctcaggcatc 1017
tgggaaggcc ttgccccccat gggctttacc ctttcctgtg ggctttctcc ctgacacatt 1077
tgttaaaaat caaacctgaa taaaactaca agtttaatat gaaaaaaaaa aaaaaaaaaa 1137
aa                                                                1139
```

<210> 2
<211> 154
<212> PRT
<213> Rodent

<400> 2

```
Met Ala Asp Asp Leu Asp Phe Glu Thr Gly Asp Ala Gly Ala Ser Ala
 1               5                  10                  15
Thr Phe Pro Met Gln Cys Ser Ala Leu Arg Lys Asn Gly Phe Val Val
            20                  25                  30
Leu Lys Gly Arg Pro Cys Lys Ile Val Glu Met Ser Thr Ser Lys Thr
        35                  40                  45
Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile Asp Ile Phe
    50                  55                  60
Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His Asn Met Asp
65                  70                  75                  80
Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly Ile Gln Asp
                85                  90                  95
Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg Glu Asp Leu
            100                 105                 110
Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln Lys Tyr Asp
        115                 120                 125
Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met Thr Glu Glu
    130                 135                 140
Ala Ala Val Ala Ile Lys Ala Met Ala Lys
145                 150
```

<210> 3
<211> 462
<212> DNA
<213> Rodent

<400> 3

```
atggcagatg acttggactt cgagacagga gatgcagggg cctcagccac cttcccaatg 60
cagtgctcag cattacgtaa gaatggcttt gtggtgctca aaggccggcc atgtaagatc 120
gtcgagatgt ctacttcgaa gactggcaag cacggccacg ccaaggtcca tctggttggt 180
attgacatct ttactgggaa gaaatatgaa gatatctgcc cgtcaactca taatatggat 240
gtccccaaca tcaaaaggaa tgacttccag ctgattggca tccaggatgg gtacctatca 300
ctgctccagg acagcgggga ggtacgagag gaccttcgtc tccctgaggg agaccttggc 360
aaggagattg agcagaagta cgactgtgga gaagagatcc tgatcacggt gctgtctgcc 420
atgacagagg aggcagctgt tgcaatcaag gccatggcaa aa                     462
```

<210> 4
<211> 462
<212> DNA
<213> Rodent

<220>
<221> misc_feature
<222> (1)...(462)
<223> n = A,T,C or G

<400> 4
atggcagacg aaattgattt cactactgga gatgccgggg cttccagcac ttaccctatg 60
cagtgctcgg ccttgcgcaa aaacggcttc gtggtgctca aaggacgacc atgcaaaata 120
gtggagatgt caacttccaa aactggaaag catggtcatg ccaaggttca ccttgttgga 180
attgatattt tcacgggcaa aaaatatgaa gatatttgtc cttctactca caacatggat 240
gttccaaata ttaagagaaa tgattatcaa ctgatatgca ttcaagatgg ttacctttcc 300
ctgctgacag aaactggtga agttcgtgag gatcttaaac tgccagaagg tgaactaggc 360
aaagaaatag agggaaaata caatgcaggt gaagatgtac aggtgtctgt catgtgtgca 420
atgagtgaag aatatgctgt agccataaaa ccctnngcaa at 462

<210> 5
<211> 462
<212> DNA
<213> Rodent

<400> 5
atggcagatg atttggactt cgagacagga gatgcagggg cctcagccac cttcccaatg 60
cagtgctcag cattacgtaa gaatggtttt gtggtgctca aaggccggcc atgtaagatc 120
gtcgagatgt ctacttcgaa gactggcaag catggccatg ccaaggtcca tctggttggc 180
attgacattt ttactgggaa gaaatatgaa gatatctgcc cgtcgactca taatatggat 240
gtccccaaca tcaaacggaa tgacttccag ctgattggca tccaggatgg gtacctatcc 300
ctgctccagg acagtgggga ggtacgagag gaccttcgtc tgcctgaagg agaccttggc 360
aaggagattg agcagaagta tgactgtgga gaagagatcc tgatcacagt gctgtctgcc 420
atgacagagg aggcagctgt tgcaatcaag gccatggcaa aa 462

<210> 6
<211> 606
<212> DNA
<213> Rodent

<220>
<221> CDS
<222> (1)...(456)

<400> 6
gct gtg tat tat tgg gcc cat aag aac cac ata cct gtg ctg agt cct 48
Ala Val Tyr Tyr Trp Ala His Lys Asn His Ile Pro Val Leu Ser Pro
 1   5   10   15

gca ctc aca gac ggc tca ctg ggt gac atg atc ttt ttc cat tcc tat 96
Ala Leu Thr Asp Gly Ser Leu Gly Asp Met Ile Phe Phe His Ser Tyr
            20   25   30

aaa aac cca ggc ttg gtc ctg gac atc gtt gaa gac ctg cgg ctc atc 144
Lys Asn Pro Gly Leu Val Leu Asp Ile Val Glu Asp Leu Arg Leu Ile
        35   40   45

aac atg cag gcc att ttc gcc aag cgc act ggg atg atc atc ctg ggt 192
Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly
    50   55   60

gga ggc gtg gtc aag cac cac atc gcc aat gct aac ctc atg cgg aat 240
Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn

```
 65                  70                  75                  80

gga gct gac tac gct gtt tat atc aac aca gcc cag gag ttt gat ggc   288
Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly
                 85                  90                  95

tca gac tca gga gcc cgg cca gat gag gct gtc tcc tgg ggc aag atc   336
Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile
            100                 105                 110

cgg atg gat gca cag cca gta aag gtc tat gct gat gca tct ctg gtt   384
Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val
        115                 120                 125

ttc ccc ttg ctg gtg gct gag aca ttc gcc caa aag gca gat gcc ttc   432
Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe
    130                 135                 140

aga gct gag aag aat gag gac tga gcagatgggt aaagacggag gcttctgcca  486
Arg Ala Glu Lys Asn Glu Asp  *
145                 150

caccttttatt tattatttgc ataccaaccc ctcctgggcc ctctccttgg tcagcagcat 546
cttgagaata aatggccttt ttgttggttt ctgtaaaaaa aggactttaa aaaaaaaaaa 606


<210> 7
<211> 151
<212> PRT
<213> Rodent

<400> 7
Ala Val Tyr Tyr Trp Ala His Lys Asn His Ile Pro Val Leu Ser Pro
 1               5                  10                  15
Ala Leu Thr Asp Gly Ser Leu Gly Asp Met Ile Phe Phe His Ser Tyr
            20                  25                  30
Lys Asn Pro Gly Leu Val Leu Asp Ile Val Glu Asp Leu Arg Leu Ile
        35                  40                  45
Asn Met Gln Ala Ile Phe Ala Lys Arg Thr Gly Met Ile Ile Leu Gly
    50                  55                  60
Gly Gly Val Val Lys His His Ile Ala Asn Ala Asn Leu Met Arg Asn
65                  70                  75                  80
Gly Ala Asp Tyr Ala Val Tyr Ile Asn Thr Ala Gln Glu Phe Asp Gly
                 85                  90                  95
Ser Asp Ser Gly Ala Arg Pro Asp Glu Ala Val Ser Trp Gly Lys Ile
            100                 105                 110
Arg Met Asp Ala Gln Pro Val Lys Val Tyr Ala Asp Ala Ser Leu Val
        115                 120                 125
Phe Pro Leu Leu Val Ala Glu Thr Phe Ala Gln Lys Ala Asp Ala Phe
    130                 135                 140
Arg Ala Glu Lys Asn Glu Asp
145                 150


<210> 8
<211> 453
<212> DNA
<213> Rodent

<400> 8
tccgtgtatt actgggccca gaagaaccac atccctgtgt ttagtcccgc acttacagac 60
ggctcgctgg gcgacatgat cttcttccat tcctacaaga acccgggcct ggtcctggac 120
atcgttgagg acctgaggct catcaacaca caggccatct ttgccaagtg cactgggatg 180
```

atcattctgg gcgggggcgt ggtcaagcac cacattgcca atgccaacct catgcggaac 240
ggggccgact acgctgttta catcaacaca gcccaggagt ttgatggctc tgactcaggt 300
gcccgaccag acgaggctgt ctcctggggc aagatccggg tggatgcaca gcccgtcaag 360
gtctatgctg acgcctccct ggtcttcccc ctgcttgtgg ctgaaacctt tgcccagaag 420
atggatgcct tcatgcatga gaagaacgag gac 453

<210> 9
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<221> misc_feature
<222> (1)...(20)
<223> n = A,T,C or G

<400> 9
tcsaarachg gnaagcaygg 20

<210> 10
<211> 42
<212> DNA
<213> Rodent

<220>
<223> Primer

<400> 10
gcgaagcttc catggctcga gttttttttt tttttttttt tt 42

<210> 11
<211> 972
<212> DNA
<213> Rodent

<220>
<221> CDS
<222> (1)...(330)

<400> 11
tcg aag acc ggt aag cac ggc cat gcc aag gtc cat ctg gtt ggt att 48
Ser Lys Thr Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile
1 5 10 15

gat att ttt act ggg aag aaa tat gaa gat atc tgc ccg tcg act cat 96
Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His
20 25 30

aac atg gat gtc ccc aac atc aaa agg aat gat ttc cag ctg att ggc 144
Asn Met Asp Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly
35 40 45

atc cag gat ggg tac cta tcc ctg ctc cag gac agt ggg gag gta cga 192
Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg
50 55 60

gag gac ctt cgt ctg cct gag gga gac ctt ggc aag gag att gag cag 240
Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln
65 70 75 80

aag tat gac tgt gga gaa gag atc ctg atc aca gtg ctg tcc gcc atg 288

```
Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met
                  85                  90                  95

aca gag gag gca gct gtt gca atc aag gcc atg gca aaa taa          330
Thr Glu Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys  *
            100                 105

ctggcttcca gggtggcggt ggtggcagca gtgatccatg agcctacaga ggcccctccc 390
ccagctctgg ctgggccctt ggctggactc ctatccaatt tatttgacgt tttattttgg 450
ttttcctcac cccttcaaac tgtcggggag accctgccct tcacctagct cccttggcca 510
ggcatgaggg agccatggcc ttggtgaagc tacctgcctc ttctctcgca gccctgatgg 570
gggaaaggga gtgggtactg cctgtggttt aggttccct ctccctttt cttttaattt 630
caatttggaa tcagaaagct gtggattctg gcaaatggtc ttgtgtcctt tatcccactc 690
aaacccatct ggtcccctgt tctccatagt ccttcacccc caagcaccac tgacagactg 750
gggaccagcc cccttccctg cctgtgtctc ttcccaaacc cctctatagg ggtgacaaga 810
agaggagggg gggaggggac acgatccctc ctcaggcatc tgggaaggcc ttgcccccat 870
gggctttacc ctttcctgtg ggctttctcc ctgacacatt tgttaaaaat caaacctgaa 930
taaaactaca agtttaatat gaaaaaaaaa aaaaaaaaaa aa                    972

<210> 12
<211> 109
<212> PRT
<213> Rodent

<400> 12
Ser Lys Thr Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile
 1               5                  10                  15
Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His
            20                  25                  30
Asn Met Asp Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly
        35                  40                  45
Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg
    50                  55                  60
Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln
65                  70                  75                  80
Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met
                85                  90                  95
Thr Glu Glu Ala Ala Val Ala Ile Lys Ala Met Ala Lys
            100                 105


<210> 13
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 13
caggtctaga gttggaatcg aagc                                        24

<210> 14
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 14
atatctcgag ccttgattgc aacagctgcc                                  30
```

<210> 15
<211> 489
<212> DNA
<213> Rodent

<220>
<221> CDS
<222> (33)...(485)

<400> 15
caggtctaga gttggaatcg aagcctctta aa atg gca gat gat ttg gac ttc 53
Met Ala Asp Asp Leu Asp Phe
1 5

gag aca gga gat gca ggg gcc tca gcc acc ttc cca atg cag tgc tca 101
Glu Thr Gly Asp Ala Gly Ala Ser Ala Thr Phe Pro Met Gln Cys Ser
10 15 20

gca tta cgt aag aat ggt ttt gtg gtg ctc aag ggc cgg cca tgt aag 149
Ala Leu Arg Lys Asn Gly Phe Val Val Leu Lys Gly Arg Pro Cys Lys
25 30 35

atc gtc gag atg tct act tcg aag act ggc aag cat ggc cat gcc aag 197
Ile Val Glu Met Ser Thr Ser Lys Thr Gly Lys His Gly His Ala Lys
40 45 50 55

gtc cat ctg gtt ggt att gat att ttt act ggg aag aaa tat gaa gat 245
Val His Leu Val Gly Ile Asp Ile Phe Thr Gly Lys Lys Tyr Glu Asp
60 65 70

atc tgc ccg tcg act cat aac atg gat gtc ccc aac atc aaa agg aat 293
Ile Cys Pro Ser Thr His Asn Met Asp Val Pro Asn Ile Lys Arg Asn
75 80 85

gat ttc cag ctg att ggc atc cag gat ggg tac cta tcc ctg ctc cag 341
Asp Phe Gln Leu Ile Gly Ile Gln Asp Gly Tyr Leu Ser Leu Leu Gln
90 95 100

gac agt ggg gag gta cga gag gac ctt cgt ctg cct gag gga gac ctt 389
Asp Ser Gly Glu Val Arg Glu Asp Leu Arg Leu Pro Glu Gly Asp Leu
105 110 115

ggc aag gag att gag cag aag tat gac tgt gga gaa gag atc ctg atc 437
Gly Lys Glu Ile Glu Gln Lys Tyr Asp Cys Gly Glu Glu Ile Leu Ile
120 125 130 135

aca gtg ctg tcc gcc atg aca gag gag gca gct gtt gca atc aag gct 485
Thr Val Leu Ser Ala Met Thr Glu Glu Ala Ala Val Ala Ile Lys Ala
140 145 150

cgag 489

<210> 16
<211> 151
<212> PRT
<213> Rodent

<400> 16
Met Ala Asp Asp Leu Asp Phe Glu Thr Gly Asp Ala Gly Ala Ser Ala
1 5 10 15
Thr Phe Pro Met Gln Cys Ser Ala Leu Arg Lys Asn Gly Phe Val Val
20 25 30
Leu Lys Gly Arg Pro Cys Lys Ile Val Glu Met Ser Thr Ser Lys Thr

```
        35                  40                  45
Gly Lys His Gly His Ala Lys Val His Leu Val Gly Ile Asp Ile Phe
    50                  55                  60
Thr Gly Lys Lys Tyr Glu Asp Ile Cys Pro Ser Thr His Asn Met Asp
65                  70                  75                  80
Val Pro Asn Ile Lys Arg Asn Asp Phe Gln Leu Ile Gly Ile Gln Asp
                85                  90                  95
Gly Tyr Leu Ser Leu Leu Gln Asp Ser Gly Glu Val Arg Glu Asp Leu
            100                 105                 110
Arg Leu Pro Glu Gly Asp Leu Gly Lys Glu Ile Glu Gln Lys Tyr Asp
        115                 120                 125
Cys Gly Glu Glu Ile Leu Ile Thr Val Leu Ser Ala Met Thr Glu Glu
    130                 135                 140
Ala Ala Val Ala Ile Lys Ala
145                 150
```

<210> 17
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 17
gtctgtgtat tattgggccc 20

<210> 18
<211> 42
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 18
gcgaagcttc catggctcga gttttttttt tttttttttt tt 42

<210> 19
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223>

<400> 19
ttgaaggggt gaggaaaa 18

<210> 20
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223>

<400> 20
ttgagtggga taaag 15

<210> 21
<211> 18

<212> DNA
<213> Artificial Sequence

<220>
<223>

<400> 21
aatcatctgc cattttaa

18